



The CDX explosion-proof vibrators have been designed for use in industrial processes in a potentially explosive atmosphere.

The enclosure of the CDX vibrators is equipped with increased thickness and joints to prevent the transmission of an internal explosion to the surrounding area.

The CDX series is characterized and enhanced by many different certifications, depending on the vibrator model.

Technical features

Power supply

Three-phase voltage from 24V to 690V (limit at 600V for UL and CSA certifications), 50Hz or 60Hz, or single-phase 100-130V 60Hz and 200-240V 50Hz; suitable for use with a PWM inverter from 20Hz to the base frequency with constant torque load profile.

Polarity

2, 4, 6 and 8 poles.

Reference Regulations and Directives

See table below.

Controls

The components that affect protection are 100% accurately controlled and recorded.

Functioning

Continual service (S1) at maximum declared centrifugal force and electric power. Intermittent services are also possible depending on the type of vibrator and the operating conditions. For detailed information, contact our technical assistance office.

Centrifugal force

Range extended to 22400 Kgf. (220 KN), with centrifugal force adjustable from 0 to 100%.

Mechanical protection

Mechanical protection IP66 according to IEC 529, EN 60529.

Protection against mechanical impacts

IK 08 according to IEC 68, EN 50102.

Insulation class

Class F (155°C).

Tropicalization

Standard on all vibrators, with vacuum encapsulation up to size 35, with "drop by drop" trickle system for larger sizes.

Ambient temperature

From -20°C to +40°C.

Vibrator thermal protection

With thermal protector at 130°C for the entire CDX range, or on request with PTC thermistors rated heat detectors 130°C (DIN 44081-44082).

Fixing of the vibrator

In all positions and therefore without restriction.

Lubrication

All vibrators are lubricated in the factory and do not require further lubrication if used in normal operating conditions ("FOR LIFE" lubrication). In heavy duty operating conditions periodical re-lubrication may be applied to size 40 and larger.

Terminal box

Large fixed electrical connections. The terminal cover, with increased thickness,

is constructed to contain internal explosions. Special shaped terminals allow to fix the power supply cable, protecting it from loosening.

Electric motor

Three-phase and single-phase asynchronous type. Designed for maximum starting torques and torque curves specific to requirements of the vibrating machines. Insulated windings using vacuum encapsulating up to size 35; using the "drop by drop" trickle system with Class H resin for the larger sizes. The rotor is die cast aluminium.

Casing

In high-tensile aluminium alloy up to size 30, in spheroidal cast iron for larger sizes. Patented shape that improves heat dispersion and lowers normal running temperature with full load. An external earthing screw is located on the casing as prescribed by Regulation IEC/EN 60079-0.

Bearing flange

Constructed in spheroidal or grey cast iron. The geometry of the flange transmits the load to the casing uniformly.

Bearings

Custom made with particular geometry, especially designed for Italvibras, suitable to support both high radial and axial loads.



The CDX-G series, obtained by the CDX series, is specifically designed for use in industrial processes in a potentially explosive gas atmosphere, they are commonly used on oil and gas drilling rigs. The CDX-G line has weight covers and terminal box covers with special protection coatings; upon request, weight covers can be supplied in stainless steel.



series CDX



series CDX-G

Approvals



Class I, Groups CD
Class II, Groups EFG
Oper. Temp. T4 (135°C)
(Amb. Temp. -20°C ÷ +40°C)

ATEX II 2 GD
Ex d IIB 120°C Gb
Ex tb IIIC T120°C Db
(Amb. Temp. -20°C ÷ +40°C)

Ex d IIB T120°C Gb
Ex tb IIIC T120°C Db
(Amb. Temp. -20°C ÷ +40°C)

Class I, Groups CD
Oper. Temp. T2C (230°C)
(Amb. Temp. -20°C ÷ +60°C)

ATEX II 2 G
Ex d IIB 160°C Gb
(Amb. Temp. -20°C ÷ +60°C)

Ex d IIB T160°C Gb
(Amb. Temp. -20°C ÷ +60°C)

Motor shaft

In treated steel alloy (Isothermic hardening) resistant to stress.

Eccentric weights

Allow continual adjustment of the centrifugal force. This adjustment is realized by a graduated scale, which expresses the centrifugal force as a percentage of the maximum centrifugal force.

A patented system (patent N° MO98A000194), called ARS, prevents adjustment errors.

Weight covers

In aluminium alloy.

Special coatings provided on CDX-G types. On request available also in stainless steel for CDX-G types.

Painting

Electrostatic surface treatment based on polymerised epoxy polyester powder in oven at 200°C. Tested in salt spray for 500 hours.

Other features

The CDX series is supplied without cable gland and with NPT threaded conduit opening.

Several sizes are available with different mounting bolt patterns. Please contact sales office at Italtibras.

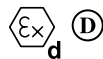
Certifications



Certificate: LR 100948. Category: Class I, Groups C,D; Class II, Groups E, F, G. Temperature Class: T4 (135°C). Standards: CAN/CSA C22.2. Zones of use: 1,2*



Certificate: E129825. Category: Class I, Groups C and D; Class II, Groups E, F and G. Temperature class: T4 (135°C). Regulations: UL N° 674-886. Areas of use: 1, 2*



Certificate: DEMKO 07 ATEX 0612032X. Category: II 2 GD - Ex d IIB 120°C Gb Ex tb IIIC T120°C Db. Directive: ATEX 94/9/EC, CENELEC EN 60079-0, EN 60079-1, EN 60079-31. Zones of use: 1, 2, 21, 22



GGTN Permit and Gost-R certificate for explosion-proof Ex d: GOST R 51330.0-99, GOST R 51330.1-99, GOST R IEC 61241-1-1-99.



Certificate: SIRA 00 ATEX 1026 Category: II 2 G, Ex d IIB. Temperature class: T4 (135°C) Directives: ATEX 94/9/EC, CENELEC EN 60079-0, EN 60079-1. Areas of use: 1, 2



Certification: CIMFR and DGMS for Indian. Category: Ex d IIB 120°C, IP 66 Regulations: IS/IEC 60079-0, IS/IEC 60079-1, IS4691-1985. Areas of use: 1, 2



Certificate of Conformity n° IECEx UL 09.0034X following standards IEC 60079-0, IEC 60079-1, IEC 60079-31



Comply with the applicable European Union directives



KOSHA Korea Certificate n° 11-AV4BO-0353/4/5/6/7/8/60 Ex d IIB 120°C - Ex td A21 IP66 T120°C

* Areas 1, 2 indicated with this symbol are areas according to classification in force in USA and Canada. They cannot be referred to the ATEX Directive.



2 poles - 3000/3600 rpm

Description		Mechanical specifications								Electric specifications						
Code	Type	SIZE	Certifications ○ ● ● ● ● ● ● ● ● ● ●	Static moment* kgmm		Centrifugal force kg				Weight kg		Max input power W		Power rating W		
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
three-phase	600384	CDX 3/300-G/D	10	•	30.1	20.4	304	297	2.98	2.91	11.5	11.0	260	270	180	190
	600385	CDX 3/500-G/D	20	•	49.9	32.4	503	471	4.93	4.62	17.0	16.0	450	500	330	390
	600387	CDX 3/800-G/D	30	•	78.0	52.0	785	754	7.70	7.40	23.3	22.4	650	685	500	520
	600389	CDX 3/1100-G/D	35	• • •	110	73.0	1105	1061	10.8	10.4	34.0	33.0	600	710	480	550
	600437	CDX 3/1500-G/D	40	• • •	161	111	1625	1602	15.9	17.7	56.1	53.6	1000	1200	850	925
	600317	CDX 3/2100-G/D	50	• • •	209	144	2114	2080	20.7	20.4	62.0	60.7	1000	1260	900	1095
	600320	CDX 3/2300-G/D	60	• • • •	222	159	2236	2300	21.9	22.5	82.5	79.5	2000	2200	1500	1606
	600323	CDX 3/3200-G/D	70	• • •	344	215	3457	3112	33.9	30.5	108	104	3100	3250	2570	2570
	600486	CDX 3/4700-G/D	80	• • •	469	329	4710	4760	46.2	46.7	144	139	4500	4500	3680	3680

single-phase	600384	CDX 3/300-G/D	10	•	30.1	20.4	304	297	2.98	2.91	11.5	11.0	280	280	180	200
	600385	CDX 3/500-G/D	20	•	49.9	32.4	503	471	4.93	4.62	17.0	16.0	500	500	340	350
	600387	CDX 3/800-G/D	30	•	78.0	52.0	785	754	7.70	7.40	23.3	22.4	700	750	450	500

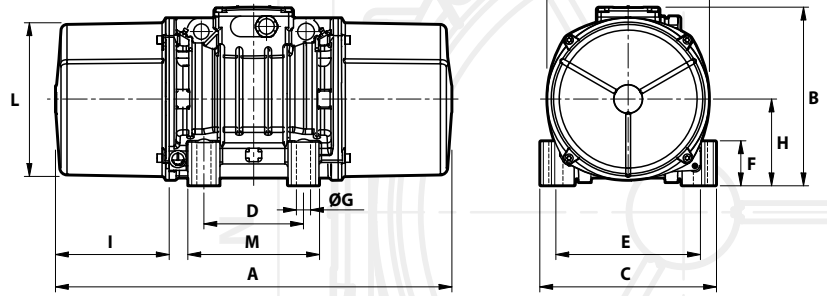
4 poles - 1500/1800 rpm

Description		Mechanical specifications								Electric specifications						
Code	Type	SIZE	Certifications ○ ● ● ● ● ● ● ● ● ● ●	Static moment* kgmm		Centrifugal force kg				Weight kg		Max input power W		Power rating W		
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
three-phase	601409	CDX 15/200-G/D	10	•	84.2	58.8	213	214	2.09	2.10	14.0	13.0	170	170	95	95
	601410	CDX 15/400-G/D	20	•	163	113	412	411	4.04	4.03	21.4	20.0	300	350	215	275
	601411	CDX 15/550-G/D	20	•	219	163	552	592	5.42	5.81	22.8	21.4	300	350	215	275
	601412	CDX 15/700-G/D	30	•	286	209	720	760	7.06	7.46	30.3	29.0	525	665	380	490
	601413	CDX 15/1100-G/D	35	• • •	415	271	1045	982	10.3	9.63	46.0	41.5	520	660	369	442
	601424	CDX 15/1410-G/D	40	• • •	561	400	1413	1449	13.9	14.2	65.6	61.0	750	1000	548	740
	601328	CDX 15/1710-G/D	50	• • •	715	485	1798	1757	17.6	17.2	70.0	67.5	1050	1300	882	1105
	601358	CDX 15/2000-G/D	50	• • •	817	561	2054	2033	20.1	19.9	75.0	69.0	1050	1300	882	1105
	601329	CDX 15/2410-G/D	60	• • • •	962	674	2420	2444	23.7	24.0	98.0	92.0	1500	1650	1305	1485
	601330	CDX 15/3810-G/D	70	• • •	1526	1034	3840	3744	37.7	36.7	133	128	2270	2250	1839	1845
	601487	CDX 15/5010-G/D	80	• • •	1990	1364	5007	4941	49.1	48.5	167	160	3140	3130	2600	2600

single-phase	601409	CDX 15/200-G/D	10	•	84.2	58.8	213	214	2.09	2.10	14.0	13.0	210	230	110	120
	601410	CDX 15/400-G/D	20	•	163	113	412	411	4.04	4.03	21.4	20.0	240	320	120	180
	601411	CDX 15/550-G/D	20	•	219	163	552	592	5.42	5.81	23.5	22.0	240	320	120	180
	601412	CDX 15/700-G/D	30	•	286	209	720	760	7.06	7.46	30.3	29.0	450	550	240	300

* Working moment = 2 x static moment.

Fig. A



Dimensional specifications (mm)

Max. current A		I _a /I _n		Type	Fig.	A	B	C	D	E	Holes		F	H	I	L	M	N	Capacitor (µF)		Cable entry
400 V 50 Hz	460 V 60 Hz	50 Hz	60 Hz								øG	N°							220 V 50 Hz	115 V 60 Hz	
0.60	0.50	3.47	4.20	CDX 3/300-G/D	A	255	191	152	90	125	13	4	28	77.5	54	130	128	150	-	-	NPT 1/2"
0.80	0.75	4.21	4.80	CDX 3/500-G/D	A	288	218	167	105	140	13	4	30	90	65	150	140	175	-	-	NPT 1/2"
1.10	1.00	3.83	6.00	CDX 3/800-G/D	A	314	230.5	205	120	170	17	4	45	102	66	177	162	200	-	-	NPT 1/2"
0.90	0.93	4.78	4.96	CDX 3/1100-G/D	A	446	248.5	210	120	170	17	4	52	112	118	192	160	218	-	-	NPT 3/4"
1.62	1.72	6.00	6.32	CDX 3/1500-G/D	A	468	278.5	235	140	190	17	4	65	116	108	210	185	225	-	-	NPT 3/4"
1.71	1.85	6.95	7.19	CDX 3/2100-G/D	A	520	278.5	235	140	190	22	4	65	116	134	210	185	225	-	-	NPT 3/4"
3.23	3.20	7.47	8.60	CDX 3/2300-G/D	A	572	312	270	155	225	22	4	52	135	146	238.5	200	253	-	-	NPT 3/4"
5.23	5.00	6.37	8.00	CDX 3/3200-G/D	A	594	342.5	310	155	255	23.5	4	65	155	137	279	210	295	-	-	NPT 3/4"
7.13	6.60	6.53	7.00	CDX 3/4700-G/D	A	638	367	335	180	280	26	4	70	175	154	303	235	320	-	-	NPT 3/4"

220 V
50 Hz

115 V
60 Hz

1.25	2.40	2.48	3.52	CDX 3/300-G/D	A	255	191	152	90	125	13	4	28	77.5	54	130	128	150	16	25	NPT 1/2"
2.30	4.50	3.35	4.22	CDX 3/500-G/D	A	288	218	167	105	140	13	4	30	90	65	150	140	175	12.5	50	NPT 1/2"
3.25	7.00	4.00	4.14	CDX 3/800-G/D	A	314	230.5	205	120	170	17	4	45	102	66	177	162	200	25	90	NPT 1/2"

Dimensional specifications (mm)

Max. current A		I _a /I _n		Type	Fig.	A	B	C	D	E	Holes		F	H	I	L	M	N	Capacitor (µF)		Cable entry
400 V 50 Hz	460 V 60 Hz	50 Hz	60 Hz								øG	N°							220 V 50 Hz	115 V 60 Hz	
0.41	0.40	2.34	2.75	CDX 15/200-G/D	A	301	191	152	90	125	13	4	28	77.5	77	130	128	150	-	-	NPT 1/2"
0.60	0.60	3.33	3.50	CDX 15/400-G/D	A	350	218	167	105	140	13	4	30	90	96	150	140	175	-	-	NPT 1/2"
0.60	0.60	3.33	3.50	CDX 15/550-G/D	A	392	218	167	105	140	13	4	30	90	117	150	140	175	-	-	NPT 1/2"
0.92	0.98	3.48	3.43	CDX 15/700-G/D	A	394	230.5	205	120	170	17	4	45	102	106	177	162	200	-	-	NPT 1/2"
0.81	0.88	4.65	4.84	CDX 15/1100-G/D	A	446	248.5	210	120	170	17	4	52	112	118	192	160	218	-	-	NPT 3/4"
1.35	1.50	5.59	5.60	CDX 15/1410-G/D	A	468	278.5	235	140	190	17	4	65	116	108	210	185	225	-	-	NPT 3/4"
1.81	1.90	5.09	5.46	CDX 15/1710-G/D	A	520	278.5	235	140	190	22	4	65	116	134	210	185	225	-	-	NPT 3/4"
1.81	1.90	5.09	5.46	CDX 15/2000-G/D	A	594	342.5	310	140	190	22	4	65	116	171 (50Hz) 134 (60Hz)	210	185	225	-	-	NPT 3/4"
2.95	2.90	7.80	7.76	CDX 15/2410-G/D	A	572	312	270	155	225	22	4	52	135	146	238.5	200	253	-	-	NPT 3/4"
3.80	3.50	6.84	8.09	CDX 15/3810-G/D	A	594	342.5	310	155	255	23.5	4	65	155	137	279	210	295	-	-	NPT 3/4"
5.40	4.85	7.82	9.90	CDX 15/5010-G/D	A	638	367	335	180	280	26	4	70	175	154	303	235	320	-	-	NPT 3/4"

220 V
50 Hz

115 V
60 Hz

1.00	2.00	1.50	1.85	CDX 15/200-G/D	A	301	191	152	90	125	13	4	28	77.5	77	130	128	150	5	25	NPT 1/2"
1.20	2.80	2.50	2.50	CDX 15/400-G/D	A	350	218	167	105	140	13	4	30	90	96	150	140	175	32/12	35	NPT 1/2"
1.20	2.80	2.50	2.50	CDX 15/550-G/D	A	392	218	167	105	140	13	4	30	90	117	150	140	175	32/12	40/35	NPT 1/2"
2.15	5.15	5.44	3.63	CDX 15/700-G/D	A	394	230.5	205	120	170	17	4	45	102	106	177	162	200	96/16	160/40	NPT 1/2"

I_a/I_n = ratio between start-up current and maximum current. ○ Start-up capacitor / Running capacitor.
Several sizes are available with different mounting bolt patterns. Please contact sales office at Italtibras.



6 poles - 1000/1200 rpm

	Description				Mechanical specifications								Electrical specifications			
	Code	Type	SIZE	Certifications ○ ● ● ● ● ● ●	Static moment* kgmm		Centrifugal force kg kN				Weight kg		Max input power W		Power rating W	
					50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
three-phase	602315	CDX 10/40-G/D	10	●	30.1	30.1	35.0	49.0	0.331	0.476	11.5	11.5	120	135	50	90
	602316	CDX 10/100-G/D	10	●	84.2	84.2	94.3	136	0.925	1.33	14.0	14.0	120	135	50	90
	602317	CDX 10/200-G/D	20	●	163	163	183	264	1.80	2.59	21.4	21.4	185	205	100	120
	602318	CDX 10/310-G/D	30	●	286	209	321	338	3.15	3.32	30.3	29.0	350	380	220	270
	602320	CDX 10/550-G/D	35	● ● ●	457	457	512	737	5.02	7.23	47.5	47.5	300	310	220	230
	602325	CDX 10/810-G/D	40	● ● ●	723	561	809	905	7.94	8.88	70.7	65.4	570	680	370	442
	602274	CDX 10/1110-G/D	50	● ● ●	1012	715	1132	1151	11.1	11.3	79.0	72.0	700	870	483	548
	602277	CDX 10/1610-G/D	60	● ● ● ●	1464	962	1638	1549	16.1	15.2	109	98.0	1040	1250	738	913
	602280	CDX 10/2610-G/D	70	● ● ●	2326	1706	2601	2747	25.5	26.9	144	130	1725	1800	1470	1470
	602365	CDX 10/3810-G/D	80	● ● ●	3422	2380	3826	3831	37.5	37.6	200	182	2100	2300	1700	1850
602201	CDX 10/22000-G	110	● ●	20025	12553	22386	20208	220	198	928	898	15600	19000	11800	14700	

8 poles - 750/900 rpm

	Description				Mechanical specifications								Electrical specifications			
	Code	Type	SIZE	Certifications ○ ● ● ● ● ● ●	Static moment* kgmm		Centrifugal force kg kN				Weight kg		Max input power W		Power rating W	
					50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
three-phase	602576	CDX 075/150-G/D	20	●	163	163	104	149	1.02	1.46	21.4	21.4	230	250	110	120
	602577	CDX 075/250-G/D	30	●	286	286	181	260	1.76	2.55	30.3	30.3	350	380	190	210
	602578	CDX 075/400-G/D	35	● ● ●	457	457	288	415	2.83	4.07	47.5	47.5	300	300	150	150
	602581	CDX 075/660-G/D	40	● ● ●	723	723	456	656	4.47	6.44	70.7	70.7	340	340	184	184
	602552	CDX 075/910-G/D	50	● ● ●	1012	1012	637	917	6.25	9.00	77.0	77.0	420	500	231	260
	602555	CDX 075/1310-G/D	60	● ● ● ●	1464	1464	922	1327	9.04	13.0	109	109	750	850	480	560
	602558	CDX 075/2110-G/D	70	● ● ●	2326	2326	1463	2107	14.4	20.7	144	144	1480	1500	1036	1100
	602602	CDX 075/3110-G/D	80	● ● ●	3421	3421	2152	3099	21.1	30.4	196	196	1850	2100	1320	1400
	602513	CDX 075/22000-G	110	● ●	28633	24508	18005	22192	177	218	1015	981	10000	13000	8100	10300

* Working moment = 2 x static moment.



Fig. A

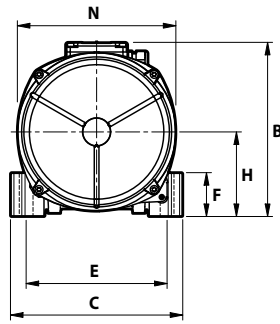
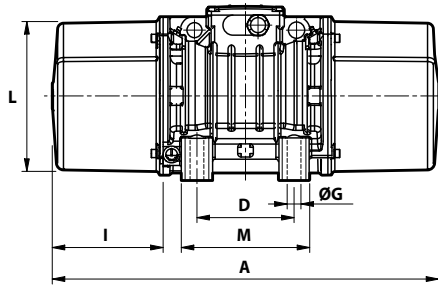
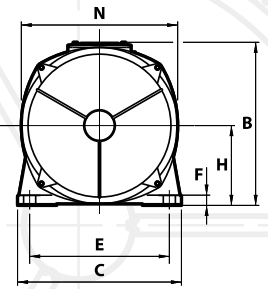
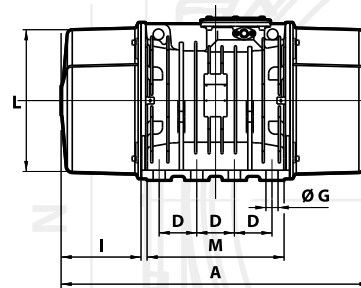


Fig. F



Dimensional specifications (mm)

Max. current		I _A /I _N		Type	Fig.	A	B	C	D	E	Holes		F	H	I	L	M	N	Cable entry
400 V 50 Hz	460 V 60 Hz	50 Hz	60 Hz								øG	N°							
0.30	0.30	1.90	2.07	CDX 10/40-G/D	A	255	191	152	90	125	13	4	28	77.5	54	130	128	150	NPT 1/2"
0.30	0.30	1.90	2.07	CDX 10/100-G/D	A	301	191	152	90	125	13	4	28	77.5	77	130	128	150	NPT 1/2"
0.50	0.50	2.72	3.10	CDX 10/200-G/D	A	350	218	167	105	140	13	4	30	90	96	150	140	175	NPT 1/2"
0.72	0.68	2.63	2.79	CDX 10/310-G/D	A	394	230.5	205	120	170	17	4	45	102	106	177	162	200	NPT 1/2"
0.57	0.61	3.89	3.77	CDX 10/550-G/D	A	446	248.5	210	120	170	17	4	52	112	118	192	160	218	NPT 3/4"
1.24	1.30	4.00	3.69	CDX 10/810-G/D	A	520 (50Hz) 468 (60Hz)	278.5	235	140	190	17	4	65	116	134 (50Hz) 108 (60Hz)	210	185	225	NPT 3/4"
1.52	1.65	4.15	4.24	CDX 10/1110-G/D	A	594 (50Hz) 520 (60Hz)	278.5	235	140	190	22	4	65	116	171 (50Hz) 134 (60Hz)	210	185	225	NPT 3/4"
2.09	2.10	4.93	5.24	CDX 10/1610-G/D	A	634 (50Hz) 572 (60Hz)	312	270	155	225	22	4	52	135	177 (50Hz) 146 (60Hz)	238.5	200	253	NPT 3/4"
3.80	3.70	5.40	6.03	CDX 10/2610-G/D	A	676	342.5	310	155	255	23.5	4	65	155	178	279	210	295	NPT 3/4"
4.75	4.75	4.19	4.67	CDX 10/3810-G/D	A	734	367	335	180	280	26	4	70	175	202	303	235	320	NPT 3/4"
25.2	25.5	5.70	5.88	CDX 10/22000-G	F	1150	607	610	140	520	45	8	38	297	297.5	542	510	582	NPT 1"

Dimensional specifications (mm)

Max. current		I _A /I _N		Type	Fig.	A	B	C	D	E	Holes		F	H	I	L	M	N	Cable entry
400 V 50 Hz	460 V 60 Hz	50 Hz	60 Hz								øG	N°							
0.85	0.76	2.13	2.11	CDX 075/150-G/D	A	350	218	167	105	140	13	4	30	90	96	150	140	175	NPT 1/2"
1.10	1.05	2.03	2.29	CDX 075/250-G/D	A	394	230.5	205	120	170	17	4	45	102	106	177	162	200	NPT 1/2"
0.57	0.58	2.47	2.50	CDX 075/400-G/D	A	446	248.5	210	120	170	17	4	52	112	118	192	160	218	NPT 3/4"
0.87	0.90	2.87	3.11	CDX 075/660-G/D	A	520	278.5	235	140	190	17	4	65	116	134	210	185	225	NPT 3/4"
1.00	1.10	2.91	2.91	CDX 075/910-G/D	A	594	278.5	235	140	190	22	4	65	116	171	210	185	225	NPT 3/4"
1.52	1.90	3.68	3.05	CDX 075/1310-G/D	A	634	312	270	155	225	22	4	52	135	177	238.5	200	253	NPT 3/4"
3.52	3.45	3.58	3.91	CDX 075/2110-G/D	A	676	342.5	310	155	255	23.5	4	65	155	178	279	210	295	NPT 3/4"
4.85	5.00	4.21	4.70	CDX 075/3110-G/D	A	734	367	335	180	280	26	4	70	175	202	303	235	320	NPT 3/4"
21.4	22.0	6.97	5.50	CDX 075/22000-G	F	1150	607	610	140	520	45	8	38	297	297.5	542	510	582	NPT 1"

I_A/I_N = ratio between start-up current and maximum current.
 Several sizes are available with different mounting bolt patterns. Please contact sales office at Italvibras.